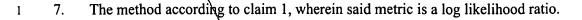
What is claimed is:

1	1.	A method for use in a receiver for detecting and demodulating at least one signal
2	of M-	ary orthogonal symbols (MOK) comprising the steps of:
3		a. receiving coded M-ary orthogonally modulated symbols over a channel;
4		b. demodulating said M-ary orthogonally modulated symbols;
5		c. calculating a metric;
6		d. decoding said symbols;
7		e. calculating probabilities of different symbols for each symbol instance;
8		f. estimating a fading channel responsive to calculating the probabilities;
9		and
10		g. iteratively feeding said metric, said decoded symbols, said probabilities
11		and said estimate back into said demodulating step to re-demodulate said
12		symbols coherently.
1	2.	The method according to claim 1, wherein said coded M-ary orthogonally
2	modu	lated symbols are convolutionally coded.
1	3.	The method according to claim 1, wherein a first instance of said demodulating
2	step is	s performed noncoherently and each succesive instance of said demodulating step
3	for sai	id signal is performed coherently.
1	4.	The method according to claim 1, further comprising the steps of:
2		a. testing the decoded signal for recognition improvement; and
3		b. repeating steps b through f iteratively until no recognition improvement is
4		detected.
1	5.	The method according to claim 1, further comprising the steps of:
2		a. testing the decoded signal for recognition improvement; and
3		b. repeating steps b through f iteratively a preset threshold of the recognition
4		improvement is attained.

6. The method according to claim 1, further comprising the step of de-interleaving.



- 1 8. The method according to claim 6, wherein said log likelihood ratio is
- 2 approximated by choosing a maximum term in a summation wherein said summation
- 3 can be one of a summation of exponentials, modified Bessel functions and a product of
- 4 both.
- 1 9. The method according to claim \(\frac{1}{4} \), further comprising the step of calculating chip
- 2 probabilities after the step of calculating symbol probabilities.
- 1 10. The method according to claim 1, wherein said estimating step is accomplished
- 2 using a filter.

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- 1 11. The method according to claim 9, wherein said filter is a Weiner filter.
- 1 12. The method according to claim 1, wherein said estimating step is performed in a
- 2 first instance using only a known first chip and following a first instance of said decoding
- 3 step, unknown chips being also used to estimate the fading channel.
- 1 13. A method for a receiver for detecting and demodulating at least one signal of
- 2 complementary code keying (CCK) symbols comprising the steps of:
- a. receiving complementary coded keying (CCK) modulated symbols over a channel;
 - b. demodulating said complementary code keying modulated symbols;
- 6 c. decoding said symbols;
 - d. adding an extra known chip at a beginning of every symbol;
- e. calculating probabilities of different symbols for each symbol instance;
 - f. calculating expected values of complex conjugates of every chip;
- g. estimating the fading channel at different chip positions within said symbol;
- h. iteratively feeding said decoded symbols, said probabilities and said estimate back into said demodulating step to re-demodulate said symbols.

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The method according to claim 12, wherein a first instance of said demodulating 1 step is performed noncoherently and each succesive instance of said demodulating step 2 for said signal is performed coherently. 3 The method according to claim 12, further comprising the steps of: 15. 1 a. determining an argument of a maximum of said signal and a value of said 2 maximum signal; 3 b. further determining a plurality of first bits of a code; and 4 c. independently differentially demodulating remaining bits of said code. 5 The method according to claim 12, further comprising the steps of: 1 a. testing the decoded signal for recognition improvement; and 2 b. repeating steps b through fiteratively until no recognition improvement is 3 detected. 4 The method according to claim 12, further comprising the steps of: 1 a. testing the decoded signal for redognition improvement; and 2 b. repeating steps b through fiteratively a preset threshold of the recognition 3 improvement is attained. 4 The method according to claim 10, wherein said estimating step is accomplished 1 using a filter. 2 The method according to claim 13, wherein said filter is a Weiner filter. 19. 1 The method according to claim 12, wherein said estimating step is performed in a 20. 1 first instance using only a known first chip and following a first instance of said decoding

step, unknown chips being also used to estimate the fading channel.